



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Glenallen Elementary School
Date of Test Report	4/26/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	47
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	0.7 pCi/L

Project Status:
Initial testing completed; no further action needed.



April 26, 2022

Brian T. Croyle, PG, CHMM
Environmental Specialist
Montgomery County Public Schools
Gaithersburg, MD 20879

Re: **Radon Testing Services**
KCI Job # 122108316

Location: Glenallen Elementary School
12520 Heurich Rd.
Silver Spring, MD 20902

Dear Mr. Croyle:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the Glenallen ES, located at 12520 Heurich Rd. Silver Spring, MD 20902 (subject site).

Scope of Services:

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Proficiency Program (NRPP) Radon Measurement Specialist (certification #111004 RT) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from <https://www.montgomeryschoolsmd.org> or www.epa.gov/radon.

KCI visited the site on March 1, 2022 and deployed fifty two (52) activated charcoal (AC) radon test kits. KCI deployed radon test kits in all frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance.

A floor plan map of the building with the test locations is included as Attachment A of this report.

As a quality control measure, KCI also included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted test kits to Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner prior to being returned to the laboratory for analysis.

KCI returned to the site on March 4, 2022 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc. is a

NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

Evaluation of Testing Conditions:

These tests represent:

- Follow-up to initial testing.

These tests were conducted to:

- Evaluate radon concentration levels at the facility.

According to AARST, *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*, ideal testing conditions would be when the building is fully occupied and the heating system is active. For this test, the facility's HVAC system was operating in heating mode; therefore, KCI concludes that this test was conducted during ideal testing conditions.

KCI recorded observations of the following conditions in each room during the time of deployment and collection of the radon test kits:

- Indoor temperature,
- HVAC Operation,
- Dehumidifier operation,
- Humidifier operation,
- Ceiling fan operation, and
- Open windows or doors.

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate low temperatures were in the 20s and high temperatures ranged from the high 50s to the low 60s Fahrenheit. Maximum sustained winds ranged from 9-17 miles per hour. Average humidity was around 40% with 0 inches of precipitation (rain) was recorded during testing period.

Results:

The sampling locations and analytical results are listed on Table 1 (Attachment B). The quality control sample locations and analytical results are listed on Table 2 (Attachment B). Sampling locations and associated test kit identification numbers and relevant field observations are listed on Table 3 (Attachment B). The laboratory analytical results are included in Attachment C. Laboratory results and exposure data for the spike samples are also included in Attachment C.

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
≥4.0 pCi/L	None	N/A
<4.0 pCi/L	See Attachment B	

Quality Control Samples	
Results of Blank Canisters:	The office blanks, and lab transit blanks had test results of

	less than the laboratory detection limit of 0.3 pCi/L.
Adequate Laboratory Precision?	Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved.
Spike Sample Analysis:	The Spike Sample analysis results indicate the laboratory is operating within statistical control limits.

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (410) 891-1769.

Sincerely,



Tyler P. McCleaf
Radon Measurement Provider
#111004 RT
KCI Technologies, Inc.

Attachments: A- Floor Plan with Test Locations
 B- Table 1-3, Radon Test Summary Spreadsheets
 C- Laboratory Analytical Results

ATTACHMENT A

Floor Plan With Test Locations

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

AC- Activated Charcoal

ACI- Air Check, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

OC- Quality Control

Table 1- Radon Testing Results		
Glenallen ES		
Test Period: 03/01/2022 - 03/04/2022		
Kit Number	Room / Area	Result
11133615	6	< 0.3
11133602	7	< 0.3
11114426	8	0.6
11133612	9	0.6
11133611	11	< 0.3
11123712	12	< 0.3
11123711	14	< 0.3
11133614	16	< 0.3
11123715	18	< 0.3
11133607	19	< 0.3
11133603	20	< 0.3
11133609	23	< 0.3
11133626	24	< 0.3
11133666	26	< 0.3
11133613	27	< 0.3
11133648	30	0.6
11133663	30	< 0.3
11133608	31	< 0.3
11133617	32	< 0.3
11133610	36	< 0.3
11114431	100	< 0.3
11130706	100	< 0.3
11123704	101	< 0.3
11123705	102	< 0.3
11130702	105	< 0.3
11130703	105	0.5
11130704	110	< 0.3
11133606	113	< 0.3
11123710	122	< 0.3
11130710	143	< 0.3
11133616	143	< 0.3
11133618	143	< 0.3
11123707	150	< 0.3
11123709	151	< 0.3
11114767	153	< 0.3
11114726	158	< 0.3
11114802	158	< 0.3
11133886	159	< 0.3
11133877	161	< 0.3
11133891	161	< 0.3
11133892	164	< 0.3
11133894	221	< 0.3

Table 1- Radon Testing Results		
Glenallen ES		
Test Period: 03/01/2022 - 03/04/2022		
Kit Number	Room / Area	Result
11123701	100A	0.5
11123702	100B	< 0.3
11123703	100F	< 0.3
11123706	102A	0.7
11123708	102C	< 0.3
11114432	105A	< 0.3
11133893	161D	< 0.3
11133887	KITCHEN	< 0.3
11133888	KITCHEN	0.5
11133889	KITCHEN	< 0.3

Table 2- Radon Testing Results			
Glenallen ES			
Test Period: 03/01/2022 - 03/04/2022			
Kit Number	QC Type	Room / Area	Result
11133648	D	30	0.6
11133618	D	143	< 0.3
11133616	FB	143	< 0.3
11130706	D	100	< 0.3
11133887	D	Kitchen	< 0.3
11133888	FB	Kitchen	0.5
11130861	OB	OFFICE BLANK	< 0.3
11130854	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

March 8, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
GLENALLAN ES

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11130706	100	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11130702	105	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11130703	105	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	0.5 ± 0.3	2022-03-07
11130704	110	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11130710	143	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07

Air Chek 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

Radon test result report for:
GLENALLAN ES

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11114431	100	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11123701	100A	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	0.5 ± 0.3	2022-03-07
11123702	100B	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11123703	100F	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11123704	101	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11123705	102	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11123706	102A	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	0.7 ± 0.3	2022-03-07
11123708	102C	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11114432	105A	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133611	11	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133606	113	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11123712	12	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11123710	122	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11123711	14	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133616	143	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133618	143	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11123707	150	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11123709	151	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11114767	153	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11114726	158	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11114802	158	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133886	159	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133614	16	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133891	161	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133877	161	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133893	161D	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133892	164	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11123715	18	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133607	19	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133603	20	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133894	221	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133609	23	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133626	24	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133666	26	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133613	27	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133648	30	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	0.6 ± 0.3	2022-03-07
11133663	30	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07

March 8, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
GLENALLAN ES

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11133608	31	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133617	32	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133610	36	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133615	6	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133602	7	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11114426	8	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	0.6 ± 0.3	2022-03-07
11133612	9	2022-03-01 @ 11:00 am	2022-03-04 @ 10:00 am	0.6 ± 0.3	2022-03-07
11133887	KITCHEN	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	< 0.3	2022-03-07
11133888	KITCHEN	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	0.5 ± 0.3	2022-03-07
11133889	KITCHEN	2022-03-01 @ 12:00 pm	2022-03-04 @ 10:00 am	< 0.3	2022-03-07

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EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies, Inc. Job Number 204620

NOMINAL Conditions: Radon Conc 27.0 pCi/L Rel. Hum 50.1 % Temp. 70.0 F

Date Start: 3/18/22 Date Stop: 3/21/22 Date Start: _____ Date Stop: _____

Time Start: 0705 Time Stop: 0705 Time Start: _____ Time Stop: _____

Device No.'s: (5) Char Bags - Device No.'s: _____

11139367, 11139368, 11139371, _____

11139710, 11139717 _____

E3 light

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

Time Start: _____ Time Stop: _____ Time Start: _____ Time Stop: _____

Device No.'s: _____ Device No.'s: _____

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

Time Start: _____ Time Stop: _____ Time Start: _____ Time Stop: _____

Device No.'s: _____ Device No.'s: _____

Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)
Background = 7 μ R/h Elevation = 820 ft

March 30, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

MCPS - Spike Sample Lab Results. Measured values are satisfactory, i.e., within $\pm 25\%$ of the chamber's reference value (25.7 pCi/L).

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11139367	SK1	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	25.9 \pm 2.1	2022-03-30
11139368	SK2	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	23.9 \pm 2.0	2022-03-30
11139371	SK3	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	25.7 \pm 2.1	2022-03-30
11139710	SK4	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	26.4 \pm 2.1	2022-03-30
11139717	SK5	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	24.6 \pm 2.0	2022-03-30

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March 30, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**RSH
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11139726	BASEMENT	2022-03-20 @ 8:00 am	2022-03-23 @ 7:00 am	0.9 ± 0.5	2022-03-30
11139725	DINING	2022-03-20 @ 8:00 am	2022-03-23 @ 7:00 am	< 0.3	2022-03-30

Air Chek 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498



Radon Test Kit Chain of Custody

Project Name: MCPS Radon – March 2022 Schools

Name of Schools:

1. Newport Mill MS
2. Rock View ES
3. Eastern MS
4. Blair, Montgomery HS
5. Montgomery Knolls ES
6. Northwood HS
7. Oakview ES
8. Pine Crest ES
9. Arcola ES
10. Glenallen ES

	Date	Initials
Radon Test Kits Deployed	03/01/2022	PM
Radon Test Kits Collected	03/04/2022	PM
Radon Test Kits Shipped to Lab*	03/04/2022	PM
Radon Test Kits Received by Lab*	03/07/2022	PM

*All samples sent to Air Check, Inc., 1936 Butler Bridge Rd, Mills River, NC 28759